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# (12) DEMANDE DE BREVET CANADIEN CANADIAN PATENT APPLICATION

(13) A1

(22) Date de dépôt/Filing Date: 2000/09/22

(41) Mise à la disp. pub./Open to Public Insp.: 2001/09/15

(30) Priorité/Priority: 2000/03/15 (2,301,474) CA

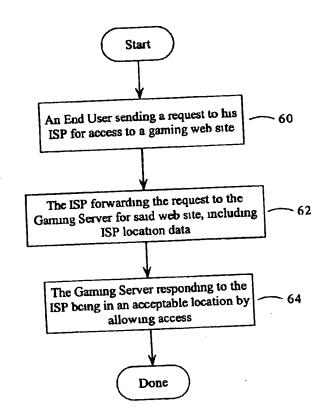
(51) Cl.Int.7/Int.Cl.7 H04L 12/16, G06F 17/60, G07F 17/32

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(54) Titre: METHODE ET APPAREIL DE JEUX DE HASARD EN LIGNE (54) Title: METHOD AND APPARATUS FOR NETWORK GAMING



The Internet provides tremendous opportunities for new online services, including online gaming and amusement services. However, betting and gambling is generally regulated on a geopolitical basis, so it is necessary to determine the physical locations of the end users, the gambling server and the gambling service provider. The invention provides a means for doing so, by identifying the location of the End User's Internet Service Provider. This allows Internet gambling and betting to be regulated and controlled. The location of the ISP may be determined many ways including: the ISP indicating its physical location, the location being determined from the ISP's IP Address, or using the Data Link Control (DLC) address or Media Access Control (MAC) address of the ISP.





## **ABSTRACT**

The Internet provides tremendous opportunities for new online services, including online gaming and amusement services. However, betting and gambling is generally regulated on a geopolitical basis, so it is necessary to determine the physical locations of the end users, the gambling server and the gambling service provider. The invention provides a means for doing so, by identifying the location of the End User's Internet Service Provider. This allows Internet gambling and betting to be regulated and controlled. The location of the ISP may be determined many ways including: the ISP indicating its physical location, the location being determined from the ISP's IP Address, or using the Data Link Control (DLC) address or Media Access Control (MAC) address of the ISP.

The present invention relates generally to computers and communications, and more specifically, to a method and system for betting and gaming over computer networks.

## 5 Background of the Invention

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It is well known that data communication networks such as the Internet, Wide Area Networks (WANs) and Local Area Networks (LANs), offer tremendously efficient means of organizing and distributing computerized data. These efficiencies have resulted in their widespread use for both business and personal applications. For example, the Internet is now a common medium for operating online auctions, academic and public forums, distributing publications such as newspapers and magazines, and performing electronic commerce and electronic mail transactions.

One type of transaction for which the Internet appears particularly attractive is on-line gaming. Current gaming and betting systems typically require some manner of direct interaction in a common physical location, for example: casinos, bingo halls, video lottery terminals, sports betting halls and the like. However, it is not always possible for interested participants to visit such establishments, for example, people who are confined to a hospital or nursing home cannot physically attend a bingo session. Of course, operators of casinos and betting services would also like to their clientele to have easier, twenty-four hour access to their services, which on-line systems would easily accommodate.

Because gambling is a regulated industry all over the world, one cannot simply create an on-line gambling site without regard for the regulations. These regulations are set by individual nations and vary from total prohibition to nearly complete permissive wagering on almost unlimited subject matter. In the United States, for example, the states have the authority to regulate gambling within their state borders. State-sanctioned lotteries, casinos, bingo halls, card parlours, off-track paramutual betting on horse racing over the telephone are but a few examples. These activities are governed by a Gambling Commission in each state, who controls the licensing of all games and businesses permitted to offer games.

Internationally, the scene is much the same; that is, individual nation states regulate gambling within their borders. As no nation has successfully regulated gambling beyond its geopolitical boundaries, clearly telecommunication systems present the opportunity for regulatory problems.

In order to regulate and enforce the gaming industry, it is necessary to identify where the gambling occurs and who the parties are. This is of particular concern relative to remote gambling transactions made using a wide area communication network such as the Internet.

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Figure 1 presents an exemplary layout of an Internet communications system 30. The Internet 32 itself is represented by a number of routers 34 interconnected by an Internet backbone 36 network designed for high-speed transport of large amounts of data. User's computers 38 may access the Internet in a number of manners including modulating and demodulating data over a telephone line using audio frequencies which requires a modem 40 and connection to the Public Switched Telephone Network 42, which in turn connects to the Internet 32 via an Internet Service Provider 44. Another manner of connection is the use of set top boxes 50 which modulate and demodulate data onto high frequencies which pass over existing telephone or television cable networks 52 and are connected directly to the Internet via Hi-Speed Internet Service Provider 54. Generally, these high frequency signals are transmitted outside the frequencies of existing services passing over these telephone or television cable networks 52.

Web sites are maintained on servers 38 also connected to the Internet 32 which provide content and applications to the User's computers 38.

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Communications between user's computers 38 and the rest of the network 30 are standardized by means of defined communication protocols.

Internet Service Providers (ISPs) 44, 54 or Internet Access Providers (IAPs), are companies that provide access to the Internet. ISPs 44, 54 are considered by some to be distinguished from IAPs in that they also provide content and services to their subscribers, but in the context of this disclosure the distinction is irrelevant. For a monthly fee, ISPs 44, 54 generally provider end users with the necessary software, user name, password and physical access. Equipped with a telephone line modem 40 or set top box 50, one can then log on to the Internet 32 and browse the World Wide Web, and send and receive e-mail.

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Figure 1 is something of a simplification, as ISPs are often connected to the Internet 32 through Network Access Points (NAPs), rather than directly as shown in Figure 1. As well, the Internet itself is far more complex than that shown in Figure 1, consisting of a vast interconnection of computers, servers, routers, computer networks and public telecommunication networks which allows two parties to

communicate via whatever entities happen to be interconnected at any particular time. However, these details would be well known to one skilled in the art.

Prior to today's widespread accessibility to the Internet, remote gaming and betting had to be implemented in a "hard-wired" manner to ensure participants were located within an acceptable jurisdiction. This required the establishment of complicated and expensive secured virtual private networks (VPN), secure wide area networks (WAN), or private telephone lines. Such techniques are known in the art and will not be described in detail herein.

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These hard-wired networks were costly and complex, and could not be easily setup or modified. Therefore, they could not be applied to participants with a casual interest in the gaming activity.

With the pervasiveness of the Internet, a large number of on-line gaming and betting services have recently appeared. Typically, these services use very weak techniques to verify the location of customers, which may explain why many of these services have located themselves beyond the legal reach of regulators in their main markets. For example, many on-line casinos directed towards the United States market are located in Antigua, Belize and Dominican Republic.

These systems generally ask the user to supply a street address which confirms they are currently in the acceptable jurisdiction. Some services even verify the end user's name, telephone number and address against a database to confirm that they should be allowed to use the service, but such controls can be circumvented simply by the end user entering a valid set of personal data for someone else in the acceptable area. Such approaches are therefore completely ineffective against a determined user.

It has been proposed that databases be created which will provide geographic locations based on the IP address of the user. In addition to the cost of creating and maintaining these databases, which would require continuous modification and updating, this approach requires the user's actual IP address, which raises privacy concerns. Furthermore, many dial up ISPs use Dynamic Host Configuration Protocol (DHCP) which dynamically assigns IP addresses to subscribers when they call up. Therefore, a device can have a different IP address every time it connects to the network, and in some systems, the device's IP address can even change while it is still connected.

DHCP simplifies network administration because the software keeps track of IP addresses rather than requiring an administrator to manage the task. This means

that a new computer can be added to the network without the inconvenience of manually assigning it a unique IP address. Because the end user is not associated with a unique IP address, the IP address does not reliably correspond with the geographic location of an end user.

Another approach is to use the existing global positioning system (GPS) to identify the geographic location of end users. The GPS is a system of 24 satellites for identifying earth locations, launched by the U.S. Department of Defense. By triangulation of signals from three of the satellites, a receiving unit can pinpoint its current location anywhere on earth to within a few meters. However, such systems require the end user to install special, expensive hardware and software. Since the GPS equipment is on the end user's premises and out of control of the regulators, it may be subject to tampering. An end user could, for example, after the data the GPS equipment to indicate that he is residing in any jurisdiction that he wishes.

It has also been proposed that IPv6 be designed to accommodate location information. IPv6 is the next generation IP protocol, which among other things, expands the address space from 32 to 128 bits. Therefore, the address space has sufficient room to include both a backward compatible IP address, as well as geographic data. However, this would require universal agreement or standardization, which has not occurred. As well, IPv6 has not been widely implemented, and will likely require some time to replace the currently pervasive IPv4 legacy hardware and software.

If the above problems could be overcome, geographical locating could be used for far more than simply gaming and betting. Any services which a web site wishes to restrict to end users in a certain geographic area may be so restricted. These services may include for example: government publications, help lines or counselling services. The system could also determine which state and national taxes apply to the sale of goods by determining the location of the buyer and seller.

There is therefore a need for a means of determining the geographic location of end users over the Internet and similar networks, provided with consideration for the problems outlined above.

# Summary of the Invention

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It is therefore an object of the invention to provide a method and system which obviates or mitigates at least one of the disadvantages described above.

One aspect of the invention is broadly defined as a method of gaming over a communication network comprising the steps of: an End User sending a request to an Internet Service Provider (ISP) for access to a gaming web site; the ISP forwarding the request to a Gaming Server for the gaming web site, including ISP location data; and the Gaming Server responding to the ISP being in an acceptable location by allowing access to the gaming web site.

Another aspect of the invention is defined as a system for targeted distribution of content over a communication network comprising: an End User; an Internet Service Provider (ISP); a Gaming Server having a gaming web site; and a communication network for interconnecting the End User, the ISP and the Gaming Server; the End User being operable to: send a request to an Internet Service Provider (ISP) for access to the gaming web site; the ISP being operable to: forward the request to the Gaming Server, including ISP location data; and the Gaming Server being operable to: respond to the ISP being in an acceptable location by allowing access.

# **Brief Description of the Drawings**

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These and other features of the invention will become more apparent from the following description in which reference is made to the appended drawings in

- Figure 1 is a physical layout of an exemplary communication network as known in the prior art;
- Figure 2 is a flow chart of a method of targeted distribution in a preferred embodiment of the invention;
- Figure 3 is a block diagram of a system of targeted distribution in a preferred 25 embodiment of the invention; and
  - Figure 4 is a flow chart of a method of targeted distribution in a preferred embodiment of the invention.

### **Detailed Description of Preferred Embodiments of the Invention** 30

A methodology which addresses the objects outlined above, is presented as a flow chart in Figure 2. This figure presents a method of gaming over a communication network which is initiated when an End User sends a request to an Internet Service Provider (ISP) to access a gaming web site at step 60. The ISP forwards this request to the Gaming Server which supports the gaming web site at step 62, but also includes ISP location data with this request. This ISP location data allows the Gaming Server at step 64 to check the location of the ISP and allowing access to the gaming web site if the ISP is in an acceptable location.

The communication network may be one of many known in the art, and may consist of several different networks working together, including wireless networks such as cellular telephone networks, the public switched telephone network, cable television networks, the Internet, ATM networks, frame relay networks, local area networks (LANs) and wide area networks (WANs).

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The End User may send his request to his ISP using a number of different devices including a computer, smart terminal, personal digital assistant, Internet-ready telephone, a dedicated gaming device or other similar interface. Such devices are well known in the art.

The gaming web site could be similar to one known in the art, and could include text, graphics, audio files, executable applets, data files or attachments such as software files, or other data and files known in the art. The gaming content is not limiting on the invention, and could include, for example, amusement games, games of chance or betting systems. Additional examples are described hereinafter.

The ISP may obtain the gaming web site data from a number of sources, though generally it will be from the Gaming Server maintaining the web site. Often, however, the same content may be available in a memory cache on the ISP's equipment, or in a similar cache elsewhere on the communication network. As well, the gaming web sites may have mirror sites to which the request may be directed.

In order to entitle the end user to commence legal gambling or betting, the regulators having jurisdiction over the end users and the casino must be established. Jurisdiction is established by determining the physical locations of the casino, the player and possibly the server. The location of the casino is known, and the location of the server is controlled by the casino. What must be specifically determined is the location of the player.

The invention verifies the location of the end user by identifying the location of the Internet Service Provider (ISP), or Internet Access Provider (IAP). While there is a distinction between an ISP and ASP in the art, the distinction is not significant for the purposes of the invention. As the ISP controls the manner in which the End User makes his physical connection to the Internet, he will be in a position to determine whether the End User's physical location can be confirmed sufficiently to allow

access. Methods of determining the End User's physical location and methods for communicating the ISP's position are described in greater detail hereinafter.

The invention of **Figure 2** addresses the problems in the art. It allows remote users to legally gamble at legal casino sites using a common and inexpensive communications network such as the Internet, as the connecting medium.

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No additional hardware is required as in the case of the GPS solutions, and DNS routers do not need to be modified. Therefore, there is no additional cost to the End User and the invention may be applied without affecting the existing network. As well, the invention is independent of whether IPv4 or IPv6 is being used.

Because the targeting is determined by the location of the ISP and does not require the IP address of the end User, the invention also operates with Dynamic Host Configuration Protocol (DHCP) systems. As well, because the determination of location is made by the ISP, there is no opportunity for the End User to tamper with the verification process.

Thus, the invention allows twenty-four hour a day, seven day a week gaming and amusement services without the inconvenience of having to attend a physical location. As well, regulators requirements can easily be accommodated. The invention offers many other advantages, which would be clear to one skilled in the art. For example, it allows organizations using casinos to launder money, to easily be identified and monitored.

The preferred embodiment of the invention is presented in by means of the block diagram in **Figure 3**, and the flow chart of **Figure 4**. **Figure 3** focuses on the relevant parties in the transaction of the invention, and does not present the same level of detail as **Figure 1**.

A number of End Users 70 are presented, who have access to the Internet 32 via their ISP 72. The End Users 70 may employ computers 38 as in Figure 1, or other interface devices as known in the art, and as will emerge as technology evolves. These End Users 70 may access their ISP 72 in different ways, such as via cable modem, telephone line mode, or wireless methods, which is not limited by the invention.

Via the Internet 32, the End Users 70 then have access to various gaming servers 74, who provide them with the software code to effect online gaming.

The corresponding method of the invention is presented as a flow chart in **Figure 4**. This method is initiated by an end user logging onto a Gaming Server's 74 web site at step **80**. This step will generally be effected by the End User searching

through the resources of the World Wide Web, using his Web Browser. A Web browser is an application program that runs on the end user's computer **38** and provides a way to look at and interact with all the information on the World Wide Web. A Web browser uses HTTP to make requests of Web servers throughout the Internet on behalf of the Web browser user. Currently, most Web browsers are implemented as graphical user interfaces.

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When the end user enters file requests by either "opening" a Web file, typing in a Uniform Resource Locator (URL), or clicking on a hypertext link, the Web browser builds an HTTP request and sends it to the Internet Protocol address indicated by the URL. The HTTP software in the destination server machine receives the request and, after any necessary processing, the requested file is returned.

The Hypertext Transfer Protocol (HTTP) is the set of rules for exchanging files on the World Wide Web, including text, graphic images, sound, video, and other multimedia files. HTTP also allows files to contain references to other files whose selection will elicit additional transfer requests (hypertext links). Typically, the HTTP software on a Web server machine is designed to wait for HTTP requests and handle them when they arrive.

The details of the login step may vary from application to application, and are well known in the art. In the preferred embodiment of the invention, the following would be included:

- the End User either types in the uniform resource locator (URL) of the casino
  web site, clicks on a previously bookmarked URL, or clicks on a hypertext link
  from another web site, to reach the home page of the gaming web site;
- the Gaming Server 74 on which the gaming web site resides, returns the main web page to the End User;
  - the End User selects the login page on the gaming web site;
  - 4. the Gaming Server 74 returns the login page, requesting that the End User enter his account and password, or similar secure identification such as a personal identification number (PIN) or digital signature; and
  - the End User returns the requested login information to the Gaming Server
     74.

Next, at step 82, the ISP receives the login response from the End User and forwards it to the Gaming Server 74, including ISP location data.

The physical location of the ISP may be determined at step 82, in a number of manners including the following:

#### Indication by ISP 1.

Of course, the ISP could simply identify its physical location to the gaming server when it places its request. To streamline the process, the gaming server could standardize the references, rather than using latitude and longitude, it could for example, provide listings of towns, cities and counties that the ISP associates itself with.

#### **IP Address** 2.

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Internet Protocol (IP) addresses are identifiers for computers or devices on 10 an Internet network, which are used to route messages. The format of an IP address in IPv4 is a 32-bit number which consists of a network prefix, and a host number. In "subnet" networks, the 32-bits are shared with a third component - the "subnet number".

The network prefix, or network prefix and subnet number in combination (sometimes referred to as the extended network prefix), identifies the ISP, or at least its network access point (NAP). Therefore, this information can be used to identify the physical ISP that an end user is connected to. With this information, the gaming server can send the proper regional content to the end user.

The number of unassigned Internet addresses is running out, so a new "classless" scheme called Classless Inter-Domain Routing (CIDR) is gradually replacing the system based on classes A, B, and C and is tied to adoption of IPv6. With CIDR, IP addresses still have a network prefix and subnet number, but the formatting has changed. Therefore, the invention can be applied to CIDR just as easily as the existing IP class system.

#### MAC or DLC Address 3.

In networks, a node is a processing location, and can be a computer or some other device, such as a printer. Every node has a unique network address, sometimes called a Data Link Control (DLC) address or Media Access Control (MAC) address.

A Media Access Control (MAC) address is a hardware address that uniquely identifies each node of a network. In IEEE 802 networks, the Data Link

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Control (DLC) layer of the OSI Reference Model is divided into two sublayers: the Logical Link Control (LLC) layer and the Media Access Control (MAC) layer. The MAC layer interfaces directly with the network media. On networks that do not conform to the IEEE 802 standards but do conform to the OSI Reference Model, the node address is called the Data Link Control (DLC) address.

If the ISP does not transmit its physical address in its request, the gaming server may use the Address Resolution Protocol (ARP) to convert the IP address into a physical address, such as a DLC address. The gaming server wishing to obtain a physical address broadcasts an ARP request onto the Internet. The server on the network that has the IP address in the request (the ISP in this case) then replies with its physical hardware address.

At step 84, the gaming server authenticates the player's identity (via the account and password for example), and confirms that the ISP lies within the acceptable jurisdiction, using a method complementary to that used in the method at step 82.

Note that if the ISP 32 allows telephone dial-up access which an end user could dial in from another jurisdiction by long distance dialling, for example, the ISP may simply use call display to confirm the dialled number. If an end user is outside the jurisdiction, the ISP may then allow the end user regular access to the Internet, but reject logon attempts to gaming sites.

using a cellular telephone, the ISP may verify the location of the End User by identifying the cellular tower serving the End User. Such technology is known in the art. That is, cellular systems are local systems. As a car travels from one cell to the next, the cellular network would have to track the user in order to maintain the communication. It would necessarily know which cell the user is in. As web sites would recognize the MAC address of the cellular provider, the MAC address must be verified as the end user moves from one cell to the next.

If the logon attempt at step 84 fails, the Gaming Server 74 returns an "access denied" message at step 86 and the routine is complete.

If authentication is successful then the routine proceeds to perform whatever steps are necessary to effect the desired game, at steps 88 through 94. These steps will vary widely, but may include:

the end user being prompted to select a game and making such a selection
at step 88. Typically, the software routine will sit in a loop until such a
selection is made;

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- the Gaming Server 74 then determines whether the End User has sufficient funds to play the requested game at step 90. If not, access is denied at step 86, otherwise, control passes to step 92;
- the game is then played at step 92. This may include many steps, as known in the art;
  - after the completion of the game, at step 94, the gaming server makes
    whatever adjustments are necessary to the end users account, crediting or
    debiting his account in respect of the wins or losses in the game. Generally,
    these accounts are managed using debit cards and credit cards, but many
    other systems could be used such as prepaid accounts or smart cards.

As the game is completed, the End User is queried as to whether he wishes to play another game at step **96**.

While particular embodiments of the present invention have been shown and described, it is clear that changes and modifications may be made to such embodiments without departing from the true scope and spirit of the invention. The invention has been described with respect to specific examples, though it would be clear to one skilled in the art that the invention may be applied to many amusement games, games of chance, for betting or entertainment purposes, including without limitation: video lottery terminals, keno, roulette, dice games such as craps, ma jong, jai lai, pai gow, horse racing, dog racing, lotteries, slot machines, baseball, football, golf, basketball, fantasy sports leagues and fantasy sports games, and card games which may include poker, black jack, solitaire, and baccarat. The invention may, for example, be used to collect participants in different geographical areas to compete against one another as teams.

Geographical locating in the manner of the invention could also be used for far more than simply gaming and betting, in fact any services which a web site wishes to restrict to end users in a certain geographic area may be so restricted. As noted above, these services may include for example: government publications, help lines or counselling services. The system could also determine which state and

national taxes apply to the sale of goods by determining the location of the buyer and seller.

Large parts manufacturers in the automotive and aerospace industries could use the invention to route parts to distributors on a geographic basis, or for added security. The large automobile manufacturers intend to implement an online parts distribution system in which different types or customers have different levels of access. The invention could be applied to such a scenario, for large or small parts, by verifying the location and integrity of the source and customer requesting the parts.

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In the preferred embodiment, all Internet communications are to be encrypted as a security precaution, using one of many techniques known in the art. Currently, the preferred method is that of public-key/private-key encryption. Encryption preserves the privacy of the transactions, prevents tampering with the game or results, and protects against unauthorized access to a player's financial accounts.

The method steps of the invention may be embodiment in sets of executable machine code stored in a variety of formats such as object code or source code. Such code is described generically herein as programming code, or a computer program for simplification. Clearly, the executable machine code may be integrated with the code of other programs, implemented as subroutines, by external program calls or by other techniques as known in the art.

The embodiments of the invention may be executed by a computer processor or similar device programmed in the manner of method steps, or may be executed by an electronic system which is provided with means for executing these steps. Similarly, an electronic memory medium such computer diskettes, CD-Roms, Random Access Memory (RAM), Read Only Memory (ROM) or similar computer software storage media known in the art, may be programmed to execute such method steps. As well, electronic signals representing these method steps may also be transmitted via a communication network.

The invention could, for example, be applied to computers, smart terminals, personal digital assistants and Internet-ready telephones. Again, such implementations would be clear to one skilled in the art, and do not take away from the invention.

## WHAT IS CLAIMED IS:

- A method of gaming over a communication network comprising the steps of:
- an End User sending a request to an Internet Service Provider (ISP) to access a gaming web site;
- said ISP forwarding said request to a Gaming Server for said gaming web site, including ISP location data; and
- said Gaming Server responding to said ISP being in an acceptable location by allowing access to said gaming web site.
- The method as claimed in claim 1, wherein said communication network 2. comprises an Internet network.
- The method as claimed in claim 2, wherein said ISP location data comprises 3. the media access control (MAC) address of said ISP.
- The method as claimed in claim 2, wherein said ISP location data comprises 4. the IP address of said ISP.
- The method as claimed in claim 2, wherein said ISP location data comprises 5. an address indicated by said ISP.
- The method as claimed in claim 3, further comprising the step of said ISP responding to the physical location of said End User being indeterminent by 6. rejecting said request for access.
- The method as claimed in claim 6, wherein said request is encrypted. 7.
- The method as claimed in claim 7, wherein said step of sending a request 8. further comprises sending an account name and password.
- A method of gaming over an Internet communication network comprising the 9. steps of:
- an End User sending a request to an Internet Service Provider (ISP) to access a gaming web site, in encrypted form, including an account name and password;

said ISP:

responding to the physical location of said End User being indeterminent by rejecting said request for access; and

forwarding said request to a Gaming Server for said gaming web site, via said Internet network, in encrypted form, including the media access control (MAC) address of said ISP;

## said Gaming Server:

decrypting said request; and

responding to said account name and password of said end user corresponding to a valid account, and said MAC address of said ISP being in an acceptable location by allowing said end user to access said gaming web site.

A system for targeted distribution of content over a communication network 10. comprising:

an End User,

an Internet Service Provider (ISP);

a Gaming Server having a gaming web site; and

a communication network for interconnecting said End User, said ISP and said Gaming Server;

said End User being operable to:

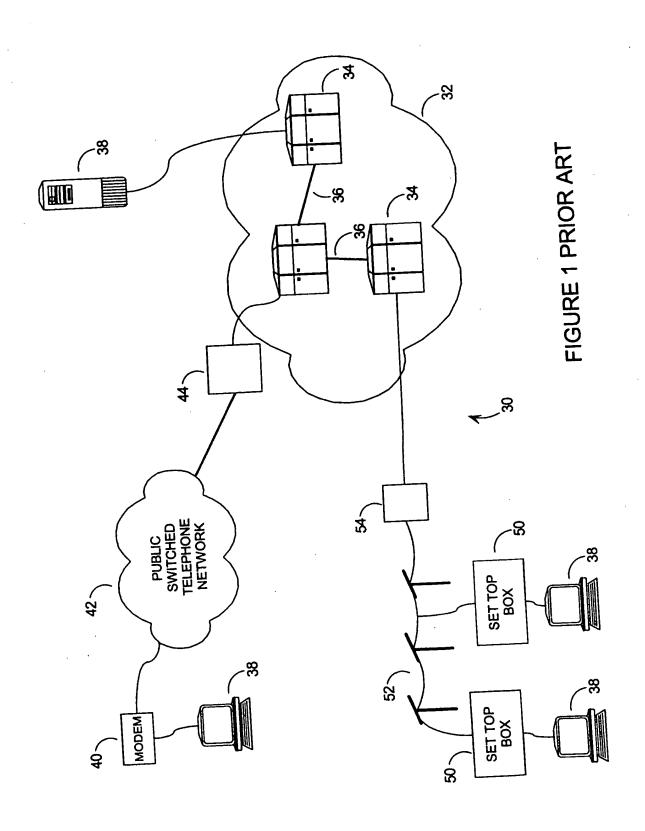
send a request to an Internet Service Provider (ISP) for access to said gaming web site;

said ISP being operable to:

forward said request to said Gaming Server, including ISP location data; and said Gaming Server being operable to:

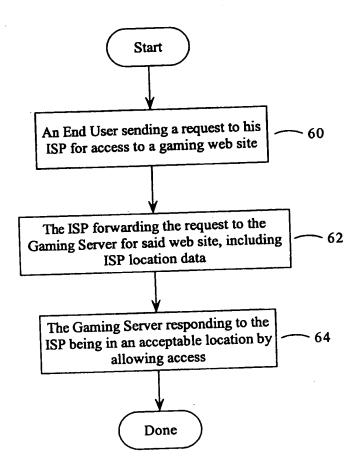
respond to said ISP being in an acceptable location by allowing access.

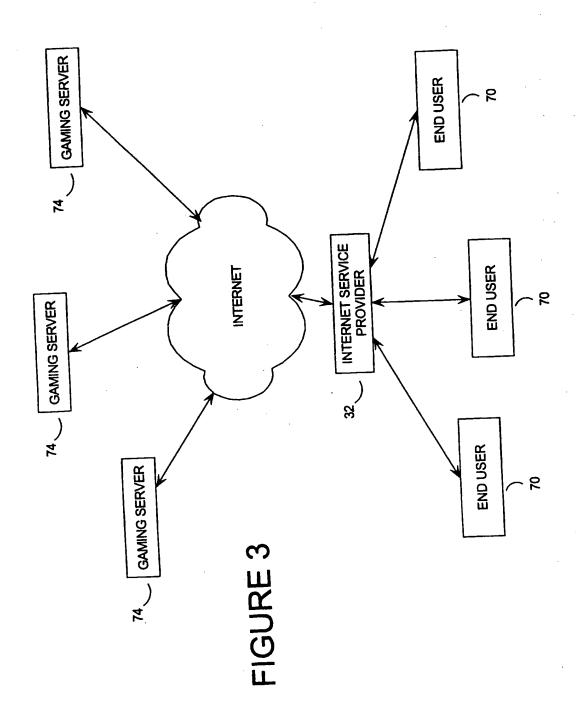
- A computer readable memory medium for storing software code executable 11. to perform the method steps of any one of claims 1 through 8.
- A carrier signal incorporating software code executable to perform the 12. method steps of any one of claims 1 through 8.



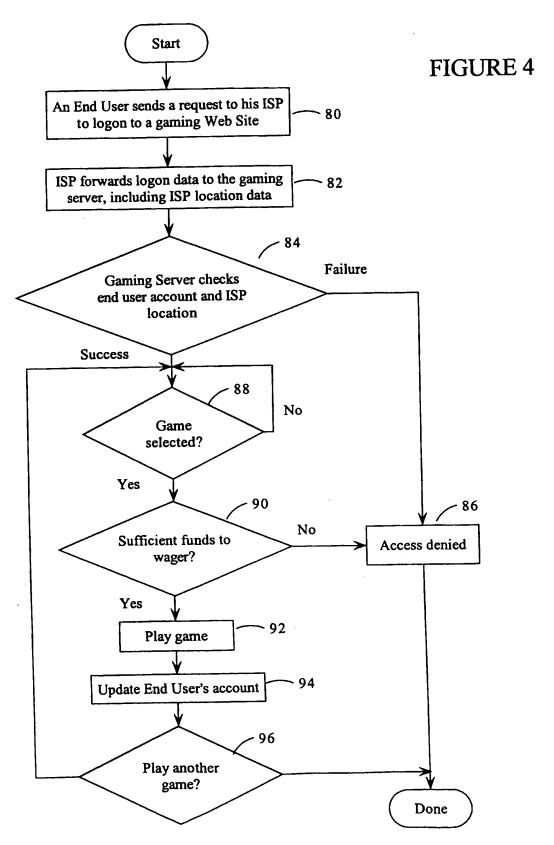
Gowling Lafleur Henderson LLP

# FIGURE 2

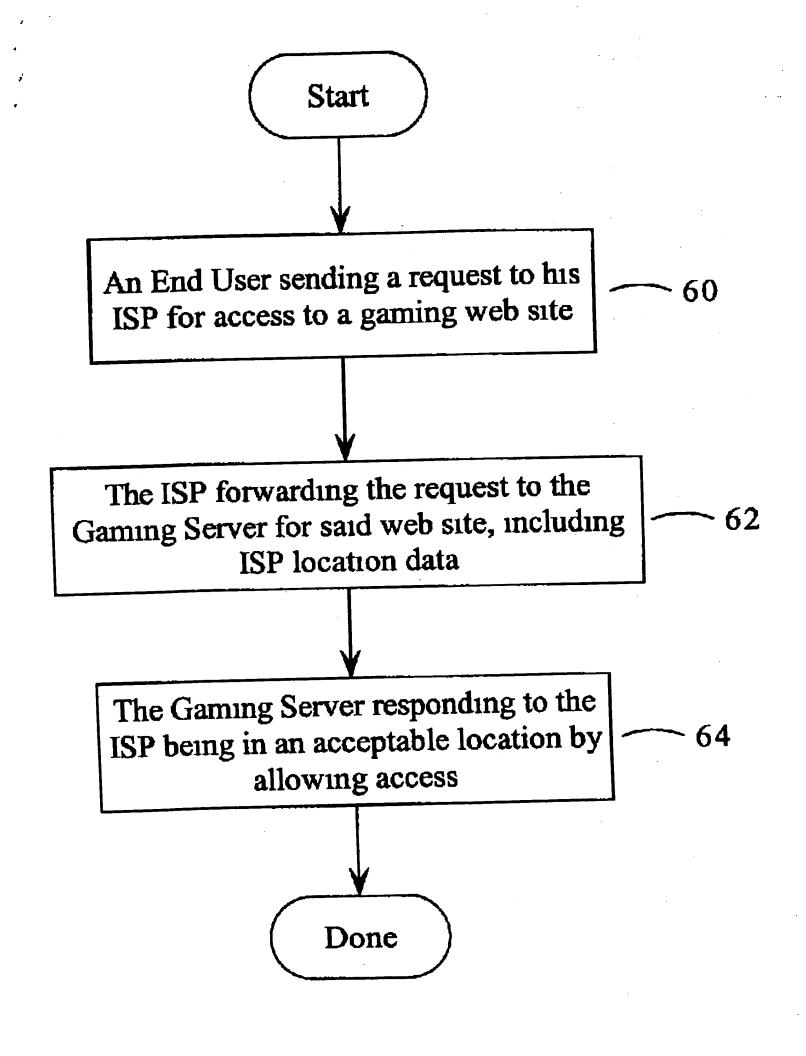




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